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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,192	03/23/2004	Shalom Luski	27653	2015

23838 7590 02/28/2007  
KENYON & KENYON LLP  
1500 K STREET N.W.  
SUITE 700  
WASHINGTON, DC 20005

EXAMINER
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KALAFUT, STEPHEN J

ART UNIT	PAPER NUMBER
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1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/28/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/806,192	<b>Applicant(s)</b> LUSKI ET AL.	
	<b>Examiner</b> Stephen J. Kalafut	<b>Art Unit</b> 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-81 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 40-43 is/are allowed.
- 6) ☒ Claim(s) 1-39 and 44-81 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ( <u>2 dates</u> ).  | 6) <input type="checkbox"/> Other: ____.                          |

Claim 44 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This claim, incorporating the limitations of its parent claims 42 and 43, recites the simultaneous application of positive and negative pole layers to the opposite sides of a thin layer, by a printing technique. This conflicts with parent claim 42, in which the two pole layers are already printed onto a respective substrate. How can a powder, already adhering to one substrate, then be printed onto another?

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 39, 45-62, 64-69, 71 and 75-81 are rejected under 35 U.S.C. 102(b) as being anticipated by Nitzan (US 5,652,043), cited by applicants.

These claims are either in product-by-process format, or contain recitations of how the present separator was made (“self-form”), which are treated under product-by-process practice. These claims are thus considered for the structure they imply rather than for the process steps. See MPEP 2113. Nitzan discloses a cell which includes an anode such as zinc powder, a cathode

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such as  $\text{MnO}_2$  powder (column 2, lines 39-42), and a third layer between them, which includes a polymer, an electroactive material, and a deliquescent material (column 2, lines 22-31). The polymer may be at least one of polyvinyl alcohol, polyacrylic acid, polyvinylpyrrolidone, polyethylene oxide, agarose, starch and hydroxyethylcellulose, the last three of these being polysaccharides (column 3, lines 13-18). Zinc chloride may be used as both the electroactive material and the deliquescent material (column 8, lines 5-8). The cathode may also include carbon powder (column 8, lines 14-16). Since  $\text{ZnCl}_2$  and some of the present polymers are disclosed, the presently recited functions of  $\text{ZnCl}_2$ , and its interactions with the polymers, would inherently accrue. The polymer-containing electrolytes of Nitzan would be the same as those implied by the present claims, even though the process of forming them may not be the same. Nitzan also discloses terminals in contact with the electrodes (column 6, lines 54-59).

Claims 1, 6, 37, 39, 45, 50 and 81 are rejected under 35 U.S.C. 102(b) as being anticipated by Moser (US 3,660,163), cited by applicants.

Moser discloses a battery made by contacting a lithium anode and an iodine cathode, resulting in a self-formed electrolyte layer between them, from a chemical reaction between the two electrodes, which produces  $\text{LiI}$  (column 1, lines 40-47). The electrodes each include a current collector (column 1, lines 62-66). This electrolyte would be an interfacial separator. Thus, Moser discloses the present process, as well as the resulting product, of these claims.

Claims 39, 45-53, 68, 70 and 71 are rejected under 35 U.S.C. 102(b) as being anticipated by Dixon *et al.* (US 4,843,772), cited by applicants.

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Dixon *et al.* disclose a cell with an electrolyte including the polysaccharide chitosan, which is gelled and crosslinked, and which is coated onto one or both of the electrodes (column 2, lines 54-61). Thus, the cell would have the structure implied by these product claims, even though the process of forming it may not be the same as presently recited.

Claims 39, 45, 50-52, 68 and 70 are rejected under 35 U.S.C. 102(b) as being anticipated by Mangano *et al.* (US 5,155,144), cited by applicants.

Manganaro *et al.* disclose a battery separator made of a polysaccharide (column 2, lines 45-51) such as crosslinked chitosan, or mixtures of such polysaccharides (column 6, lines 62-68). The separator is used with anodes and cathodes (column 2, lines 63-64). Thus, the cell would have the structure implied by these product claims, even though the process of forming it may not be the same as presently recited.

Claims 39, 45, 52, 54 and 65 are rejected under 35 U.S.C. 102(b) as being anticipated by Denton (US 5,962,168), cited by applicants.

Denton discloses a battery in which a polymer electrolyte (26) is disposed between two electrodes (12, 14) and thus forms an interfacial separator. The electrolyte may be a mixture of two or more polymers, including polyvinylpyrrolidone (column 4, lines 22-31). This would be the same structure as one resulting from the physical interaction of two polymers. Thus, the cell would have the structure implied by these product claims, even though the process of forming it may not be the same as presently recited.

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Claims 39, 45, 54-56 and 59 are rejected under 35 U.S.C. 102(a) and (e) as being anticipated by Kolb *et al.* (US 6,080,282), cited by applicants.

Kolb *et al.* disclose a cell including a gelled polyethylene oxide electrolyte (28) between two electrodes (32, 40), and which also includes poly methyl methacrylate (column 3, lines 29-34). See also column 4, line 55 through column 5, line 14. The electrolyte would thus be the result of a physical interaction between the two polymers. A polymerization initiator may also be present (column 4, lines 50-54). Thus, the cell would have the structure implied by these product claims, even though the process of forming it may not be the same as presently recited.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nitzan, *supra*.

This claim differs from Nitzan by reciting carbon within the anode. However, carbon is well known as a conductive additive for battery electrodes. While zinc is a metal, and thus conductive itself, during cell operation, it would oxidize to zinc oxide and thus become less conductive. For these reasons, it would be obvious to include carbon within the anode of Nitzan.

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moser in view of Nitzan, both *supra*.

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This claim differs from Moser in that the terminals are applied by using printing technology. Nitzan teaches printing technology as a preferred way to apply terminals to a cell (column 6, lines 49-54). Because printing would avoid the heat needed to spot-weld the terminal onto the cell, as described by Moser (column 1, lines 62-67), it would be obvious to use printing technology as taught by Nitzan to form the terminals of Moser.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-39 and 45-81 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-84 of U.S. Patent No. 7,022,431. Although the conflicting claims are not identical, they are not patentably distinct from each other because patented claim 1 recites the contacting of positive and negative pole layers to self-form an interfacial separator therebetween. Patented claim 44 recites a cell having positive and negative

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pole layers with an in-situ formed interfacial separator therebetween, which is the product of interaction between components within the pole layers, without a separately added separator. This in-situ formed separator would thus be a self-formed separator as recited in present claim 45. Dependent patented claims 1-44 and 46-84 recite the same various details as present claims 2-39 and 56-81.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references cited in the International Search Report have been considered. Present claims 1-39 and 45-81 are the same as filed in parent application no. 09/931,943 (now Patent No. 7,022,431) and are entitled to its filing date. Langan *et al.* (US 2003/0059673) and Webber (US 2003/0070283) and Lusky *et al.* (WO 03/017392) are published to recently to be applicable to these claims. Nitzan (WO 98/56458) is related to the Nitzan patent discussed above. Bauer *et al.* (WO 00/62362) discloses a separator material coated onto an electrode material, which itself is still wet from its own deposition step, but does not disclose the self forming of a separator from materials contained in or coated onto electrode active materials. Cited with this action are Lake (US 6,025,089) and Lake (US 6,004,359), which each disclose printed cells, in which the anode is made by melting lithium.

Claims 40-43 are allowed. The prior art cited herein or by applicants does not disclose a process of making a battery that includes printing layers of separator materials onto previously printed electrode active material layers, where the separator layers include an ingredients that self-form the final separator.



Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



sjk

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